*April* 23*d*.

Vice-President, BRIDGES, in the Chair.

Thirty-one members present.

A paper was presented for publication, entitled

"Notes on the habits of Aphredoderus Sayanus, by Charles C. Abbott," and was referred to a Committee.

---

*April* 30*th*.

MR. LEA, President, in the Chair.

Twenty-three members present.

On report of the respective Committees, the following papers were ordered to be published:

**Revision of the Genera of North American SCIÆNINÆ.**

BY THEODORE GILL.

The present memoir has resulted from our studies of the characters of the *Liostomi* and other American Sciænoids, and was intended only to embrace the diagnoses of our genera, but in order to appreciate more fully the relations of those forms, we were induced to study the foreign ones, and have believed that the results are of sufficient interest and importance to submit to ichthyologists. There is a number of other genera confounded under those of Cuvier, but as a gentleman of the Museum of Comparative Anatomy of Cambridge is understood to be engaged in the profound study of the whole family, we refrain from naming and characterizing them. The diagnoses of the exotic genera here described will be sufficient to enable the reader to appreciate the distinctions which exist between our own species and those of the genera with which most of them have been hitherto considered congeneric.

Subfamily SCIÆNINÆ Gill.

The body varies in shape, ranging from an oblong rhomboideo-ovate form to an elongated fusiform one. When the inferior outline of the head ascends to the snout, it is with a very gradual and slight curve. Both jaws are formed with teeth, which are of a more or less acutely conical form.

The dorsal fins are united by a slightly elevated membrane; the first is of moderate height, being longer than high; the second is oblong or elongated. The anal fin is of a trapezoidal form, and as high or higher than long. The ventral fins are generally inserted under or behind the bases of the pectorals, rarely a very short distance in front.

The scales are ctenoid and generally arranged in very oblique rows.

The inferior pharyngeal bones when in place form a triangular U or V-shaped body with a broad triangular excavation, whose sides are slightly emarginated, and whose anterior apex is suddenly continued to an oblong triangular fissure between the opposite bones. Each bone is itself semi-claviform and more or less curved upwards behind; its external vertical margin is straight or nearly so; its internal margin, for the first half of its length, is also straight, but thence, with a slight sigmoid curve, converges to the end of the posterior prolongation of the bone. Beneath the bone, there is an external ridge which is marginal before but slightly recedes behind.

The upper pharyngeal bones are six, or three on each side; the median is subtriangular or triangularly-ovate; the external, or anterior and posterior elongated in the direction of the sides of the median; the posterior is broadest, and has a more or less subovate form.

The teeth of the pharyngeal bones are well developed and card-like, more or less conic, and largest on the median upper pharyngeal, and nearest the internal borders of the lower.

The setæ or setose laminæ of the anterior ceratobranchials are short or moderate, compressed, and more or less armed with slender acute teeth on their inner margins.

The subfamily of Sciæninæ as thus restricted will include the *Otolithi*, whose lower jaw projects beyond the upper, as well as the *Sciænæ*, *Corvinæ* and allied fishes, whose lower jaw is shorter and more or less embraced within the upper. The groups thus differing might possibly be considered as distinct families and characterized as follows:

### Otolithinæ.

This group is distinguished by its more or less equally subelliptical sub-oval or fusiform body, covered by very oblique rows of moderate or rather small scales. The mouth is terminal, the lower jaw being produced or considerably longer than the upper. Both jaws are armed with teeth. The margin of the snout is entire. The limbs of the lower jaw have very minute and scarcely visible pores. The dorsal fins are more or less united at their base; the second is long. The ventral fins are situated near the vertical of the bases of the pectorals, rarely before.

### Corvininæ.

The body is covered with generally very oblique rows of moderate or large scales. The mouth is more or less inferior, the lower jaw being received within the upper. Both jaws are armed with teeth. The margin of the snout is generally more or less quadrilobate between the suborbital bones; the incisions oblique, and those next the bones always deepest. The limbs of the lower jaw have usually each two pores, and there is almost always one near the symphysis. The dorsal fins are more or less united at their base; the second long. The ventral fins are inserted more or less behind the pectorals.

But as the greater length of the lower jaw is the only constant character, the propriety of doing so with our present knowledge of the subject is very doubtful. We will therefore regard them as simple sections which may not be even natural, the differences existing in the *Cynoscions* or American *Otolithi*, and the typical *Sciænæ* being perhaps of even less value than those which distinguish the *Sciænæ* from fishes like the *Umbrinæ*, *Micropogons*, and others.

The characters which distinguish the Sciæninæ from the Liostominæ and Haploidinotinæ are trenchant and very distinct, but are almost entirely anatomical, there being positively no external characteristic or features between the first and last which would serve for their restriction. Yet the distinction between all of the Sciæninæ and of the Haploidinotinæ is founded on a character which has been regarded by many of the most profoundly learned ichthyologists as of even ordinal value. The differences which exist between the Sciæninæ and Liostominæ are of almost equal value, and serve well to illustrate the importance of more profound investigations of the characteristics of animals than are usually instituted.

### § 1.

Lower jaw projecting beyond the upper.

### Genus Otolithus Cuvier.

Otolithus *Cuvier*, Regne Animal, ed. i. vol. i.

Type. Otolithus ruber *Cuv.*

### Genus Cynoscion* Gill.

Otolithus sp. *Cuvier*, Regne Animal, ed. i. vol. ii. p. 299.
Cestreus *Gronow*, Catalogue of Fish collected and described by L. T. Gronow, now in the British Museum, p. 49. 1854.

Body elongated and nearly fusiform. Caudal peduncle of moderate size.

Head oblong-conical, with a scarcely convex snout. Eyes wholly in the anterior half of the head. Mouth oblique; the supramaxillars cease nearly under or little before the posterior borders of the orbits. Lower jaw protuberant. Preoperculum with its margin membranous and crenulated.

Teeth distant and recurved, nearly uniserial in the lower jaw, in front preceded by an additional row; nearly biserial in the upper jaw, and normally with a canine tooth on each side of the symphysis; one is generally deciduous.

Anterior dorsal fin with generally nine or ten spines; posterior of normal size. Anal fin trapezoidal, with only one very slender spine apparent externally. Caudal fin subtruncated. Ventrals in the same relative position as those of *Sciæna*.

Lateral line with a sigmoid flexure, tubular, in scales formed like those of the rest of the body.

The pharyngeal bones are armed with acute teeth; those of the upper are considerably curved. The setæ of the first ceratobranchials are slender; their teeth are rarely in more than one or two irregular rows, and are but slightly curved. The internal sides of the first and both sides of the remaining branchial arches have a row of appressed semioval plates, armed with curved teeth, increasing in size towards the margin; besides the row of marginal plates, the sides have also many smaller ones.

This genus is somewhat allied to *Sciæna*, but differs especially in the protrusion of the lower jaw, the presence of symphyseal canine teeth in the upper, the character of the preoperculum, and the single slender spine of the anal fin.

It is also nearly allied to the typical *Otolithi*, differing from them by the absence of canine teeth on the lower jaw, the condition of the margin of the preoperculum, the presence of only one anal spine, the character of the lateral line, and especially in the position of the ventral fins.

Type. Cynoscion regalis *Gill.*
*Syn.* Otolithus regalis *Cuv. et Val.*

§ II.

Lower jaw received within the upper.

### Genus Sciæna (Artedi.)

Sciæna sp. *Artedi*, Genera Piscium, Gen. xxix.
Sciæna *Cuv.*, Regne Animal, ed. ii. vol. ii.

Body elongated, with the dorsal outline slowly descending and slightly arched from the dorsal to the snout, and under the second dorsal nearly straight. Caudal peduncle of moderate size.

Head oblong-conical, the superior surface declining more rapidly than the lower ascends. Snout before convex. Eyes in the anterior half of the head. Mouth oblique; the supramaxillary bones continued nearly to the vertical of the hinder border of the orbit. Lower jaw little shorter than the upper, and received within the external row of teeth of the upper jaw.

Preopercular margin denticulated.

Teeth in each jaw in one row, distant, recurved and rather large; behind the external row in the upper jaw there is a band of smaller teeth; in the

*Composed of κύων, dog and σκιον, the modern Greek name of the *Umbrina cirrhosa*, according to Rondelet. The name of *Cynosciæna* would not be euphonious.

lower, there is an external one of smaller teeth, and at the symphysis still smaller ones are mixed between the two rows.

Anterior dorsal fin sustained by nine spines; the posterior of normal size, and generally provided with less than thirty rays. Anal fin of the usual size; its second spine short. Caudal subtruncated. Ventral fins inserted behind the bases of the pectorals.

Lateral line parallel with the back, simply tubular and perforated in scales, similar to those of the rest of the body.

The armature of the pharyngeal bones and arches resembles mostly that of *Cynoscion*, but the plates are not compressed, but rather developed as projecting ridges, and the supernumerary plates are very few or obsolete.

Type. Sciæna aquila *Cuv.*

### Genus Anomiolepis Gill.

Body compressed, scarcely elongated and subclavate, with the caudal peduncle of moderate length.

Head short, with the muzzle short and convex, and with the lower jaw also ascending upwards with a slight curve.

Preoperculum with its margin moderately oblique and apparently dentated.

Eyes mostly anterior. Mouth oblique. Supramaxillary bones well exposed, and extending to or beyond the posterior borders of the pupils. Lower jaw received within the external row of teeth of the upper.

Teeth uniserial; those of the upper jaw distant, and the anterior much larger; those of the lower jaw increasing in size backwards.

Anterior dorsal fin furnished with about ten spines; second elongated. Anal fin with its first spine short and its second moderate. Caudal fin probably rounded or lanceolate.

Lateral line running through a row of subcircular cycloid scales, whose posterior margin have each a subcircular incision.

The pharyngeal bones and arches are furnished nearly in the same manner as in *Sciæna*.

This genus is represented by a new species, of which two specimens were found at Hong Kong, China, by Dr. Stimpson. Only a single specimen is at present accessible, and on it we cannot find a band of villiform teeth behind the external row of large ones, even with the aid of a good lens, and are consequently compelled to believe that there is none. The species appears to be related to the *Corvina tridentifer* of Richardson, which has a band of villiform teeth behind the external ones; but besides this character, which is of generic importance, it differs in others. Like the fish of Richardson, the present species has four large teeth in front in the upper jaw.

The name which has been bestowed on this genus is intended to draw attention to the peculiar structure of the scales of the lateral line, which remind the observer of the perforate valve of a shell of the genus *Anomia*.

### Genus Plagioscion Gill.

Body elongated, well curved from the dorsal to the snout, and almost straight under the second dorsal; abdominal outline nearly straight. Caudal peduncle short and slender.

Head moderate, compressed and subconical, slightly depressed over the eyes, and with the muzzle rather short, high, subtruncated, and protuberant. The external fissures alone are slightly developed. Mental pores obsolete. Preoperculum with its crest and margin oblique, nearly parallel, and with its margin dentated most at its angle. Eyes anterior. Mouth oblique. Supramaxillary bones mostly concealed, extending below the posterior borders of the orbits. Lower jaw received within the upper. Lips fleshy.

Teeth in the upper jaw in a villiform band surrounded by a row of stronger ones; larger ones nearly uniserial, mixed with smaller in the lower jaw.

Anterior dorsal fin with ten spines; second long. Anal with its second spine robust. Caudal lanceolated.

Lateral line much curved under anterior third of the second dorsal fin.

The pharyngeal bones and arches present no well marked peculiarities to distinguish them from those of the *Sciænæ*.

This genus is proposed for a new species of the Caribbean Sea, which has considerable resemblance and affinity to the so-called *Sciæna lucida* of Richardson and *Sciæna pama* of Cuvier and Valenciennes; but yet, on account of the robust second spine of the anal, if consistency should be observed, would be referred to the genus *Corvina*, by those who adopt the genera of Sciænoids of Cuvier.

### Genus Homoprion Holbrook.

Homoprion sp. *Holbrook*, Ichthyology of South Carolina, p. 168.

Body oblong, compressed, and with a form similar to that of *Bairdiella*.

Head also like that of *Bairdiella*. Mouth terminal and oblique. Supramaxillary bones ending under or nearly under the pupil.

Preoperculum with a lobed and distinct crest, and with its posterior-angular margin armed with radiating spines. The pores are probably similar in development to those of *Bairdiella*.

Upper jaw armed "with a row of rather stout, conical, recurved teeth," behind which "are numerous, small, card-like teeth;" lower jaw with "one group of small, card-like teeth."

Anterior dorsal fin provided with about eleven spines. Anal fin with its second spines equalling in length two-thirds of the succeeding articulated ray. Caudal fin cuneate or lanceolate.

No specimens of the *Homoprion lanceolatus*, which is the type of the genus, are at present contained in the museum of the Smithsonian Institution. The preceding diagnosis has therefore been principally compiled from the description and figure given by Dr. Holbrook.

As previously observed, the *Homoprion subtruncatus* of Gill does not appear to be congeneric with the type, but to be more nearly allied to, if not, indeed, a representative of the same genus as the *Bairdiella argyroleuca*.

Type. Homoprion lanceolatus *Holbrook*.

### Genus Bairdiella Gill.

Perca sp. *Mitchill*.
Corvina sp. *Cuv. et Val.*
Bairdiella *Gill*, Catalogue of the Fishes of the Eastern coast of North America, p. 33, February, 1861.

Body oblong, compressed, with the dorsal outline rapidly descending in a nearly straight line from the dorsal fin, and with the abdominal outline nearly straight.

Head compressed, conical, with the muzzle scarcely convex, and with the lower jaw ascending. Mouth terminal and oblique. Supramaxillary bones mostly exposed, and ceasing under or slightly behind the pupil of the eyes.

Preoperculum with no distinct crest; its posterior margin and rounded angle denticulated, the teeth increasing in size towards the angle. Two lateral pores of each ramus of the jaw small; the two symphyseal ones rudimentary.

Anterior row of stout and recurved conical teeth in each jaw, behind which, in the upper, is a narrow band of villiform ones.

Anterior dorsal fin sustained by nine or ten spines. Anal fin with the second anal spine more than two-thirds as long as the longest branched ray. Caudal fin subtruncated.

Lower pharyngeal bones combined form a lanceolate, or very deeply ex-

cavated triangle; each separately is semi-claviform. Their upper surface is covered with small teeth, and along the internal margin with a row of scarcely recurved more elongated ones. The upper pharyngeals are also clothed with small teeth, besides which, on the median bone, are conical ones like those of the lower bones. The first branchial arch is externally furnished with compressed setæ, which are muricated on their internal borders; internally, they have transverse thick ridges with villiform teeth, like those of the other arches; the external rows of ridges are larger than the internal.

The scales of this genus are arranged in much less oblique lines than in most of the other representatives of the subfamily of *Sciæninæ*. An oblique row in the typical species extends from the commencement of the second dorsal to that of the anal.

This genus has been established for the *Perca argyroleuca* of Dr. Mitchill, or the *Corvina argyroleuca* of Cuvier and Valenciennes, and the allied species chiefly found in the Caribbean and neighboring seas. The *Homoprion xanthurus* of Holbrook, or *Homoprion subtruncatus*, perhaps belongs to this genus also, but as it is said to have "two or three series of small, pointed, recurved, card-like teeth, with an outer row of larger, conical, pointed teeth" in *both* jaws, it is not deemed advisable to positively place it there. The specimens referred to under that name by Dr. Girard, in the "Report on the Ichthyology of the Mexican Boundary Survey," as preserved in the Smithsonian Institution, belong to the *Bairdiella argyroleuca*. We have examined five of the specimens labelled as *Homoprion xanthurus*, and have counted the number of rays of the second dorsal fin. There are one spinous and twenty or twenty-one articulated rays, the last of which is double. They therefore agree in the number of rays, as well as in appearance, with the *Bairdiella argyroleuca*. The *Homoprion subtruncatus* has thirty-two articulated dorsal rays. A variation equalling a third of the greatest number of rays is rarely found in the same natural genus. Yet there is a very close resemblance between that species and the type of *Bairdiella*. It certainly shows much more affinity to the latter externally than to the *Homoprion lanceolatus*.

This genus is less nearly allied to *Corvina;* it differs in form, squamation and the dentation of the margin of the preoperculum. The genus *Stellifer* of Cuvier is founded on the *Bodianus stellifer* of Bloch, a species supposed to belong to this group, but which cannot be positively identified.

Type. Bairdiella argyroleuca *Gill.*
*Syn.* Bodianus argyroleucus *Mitchill.*
Corvina argyroleuca *Cuv. et Val.*

### Genus Corvina Cuv.

Corvina *Cuv.*, Regne Animal, ed. ii. vol. ii. p. 173. 1829.

Body oblong rhombo-ovate, with the ante-dorsal region slightly curved, and thence declining in a straight line to the snout. The subdorsal region declines with a slight curve backwards.

Head oblong, with the snout rather high and truncated. The profile is straight and rapidly declivous. Eyes anterior, subcircular. Preoperculum scarcely dentated; mental pores well developed. Mouth subterminal and nearly horizontal. Supramaxillary bones well exposed and terminating before the hinder border of the orbit.

Teeth in a moderate band in each jaw; that of the upper preceded by a row of larger ones.

Anterior dorsal fin with about ten spines; the second long. Second anal robust.

The variable teeth of the lower and median upper pharyngeal bones are

short, cylindro-conic and very blunt. The setæ are normal. The dentiferous plates of the arches developed as thick compressed ridges.

The scales of the head are mostly cycloid.

Type. Corvina nigra *Cuv.*

Genus Rhinoscion Gill.

Amblodon sp. *Girard*, Explorations and Surveys for a Railroad Route, &c., vol. x. Fishes, p. 98.

Body oblong, with the ante-dorsal region convex, and the occipito-nasal profile nearly straight.

Head oblong, with the snout slender and protuberant, and the profile nearly straight. Eyes anterior and subcircular. Preoperculum scarcely dentated. Mental pores developed. Mouth inferior. Supramaxillary bones only partially concealed, not reaching to the posterior borders of the eyes.

Teeth in a band in each jaw, preceded in the upper especially by a row of larger ones.

Anterior dorsal fin with ten spines; second anal spine robust.

The variable teeth of the lower pharyngeal bones are cylindro-conic; those of the median upper ones acutely conic and curved. The setæ of the first ceratohyals are normal. The dentiferous plates of the arches very thick and not compressed.

The scales of the cheeks are ctenoid like those of the body.

Type. Rhinoscion saturnus *Gill.*
*Syn.* Amblodon saturnus *Girard.*

Genus Johnius Bloch.

Johnius *Bloch*, Ichthologie ou Hist. Nat. Générale et Particulièr des Poissons, vol. x., p. 107.
Corvina sp. *auct.*

Body elongated, with the dorsal outline arched, gradually descending from the dorsal to the snout, and slowly declining with a gentle curve from the commencement to the end of the dorsal fins. Abdominal outline scarcely or slightly convex.

Head oblong, with the profile oblique, the muzzle convex and protuberant, and the lower jaw scarcely ascending. Eyes of moderate size, anterior to a vertical line dividing the side of the head into two halves. Preoperculum with its vertical and horizontal margins finely denticulated. Two lateral pores evident, and often one or rarely two symphyseal ones present. Mouth slightly oblique and subterminal. Supramaxillary bones moderately hiding under the suborbital, extending to about the vertical of the posterior borders of the orbits.

Teeth cardiform, in a band on each jaw, and in the upper one preceded by a row of stronger curved ones.

Anterior dorsal fin provided with nine or ten spines. Anal fin with its second spine about half as long as the succeeding soft ray. Caudal fin generally entire or with its submedian rays extended.

The variable teeth of the lower and median upper pharyngeal bones are cylindro-conic. The setæ of the first pair of ceratohyals are normal; the dentiferous plates of the branchial arches are thick ridges.

The assumed North American representative of this genus may possibly not be congeneric with its type, but as no specimens are accessible, and as the figure of Bloch and the description of Cuvier and Valenciennes are not sufficiently exact and detailed to enable us to decide, it is for the present retained here.

Type Johnius carutta *Bloch.*

Genus MENTICIRRHUS Gill.

Sciæna sp. *Linn.*, &c.
Umbrina sp. *Cuv.*, Regne Animal, ed. i. vol. ii. p. 297.

Body elongated, with the dorsal outline arched, very gradually descending from the dorsal to the snout, and slowly descending to the end of the second fin. Abdominal outline nearly straight.

Head rather elongated, with the profile oblique, and before the eyes slightly arched. Snout convex and considerably protuberant. Eyes of moderate size, situated entirely in the anterior half of the head. Mouth horizontal and inferior. Supramaxillary bone ending nearly under the posterior border of the eye's pupil, chiefly concealed under the suborbitals. Preopercular margin finely denticulated. Lower jaw with a single barbel, with a pore in front, and with two lateral pores on each side.

Teeth in both jaws villiform; in the upper one, the band of villiform ones is surrounded by a row of larger curved ones.

Anterior dorsal fin sustained by ten or twelve spines, the third of which is frequently more or less prolonged. Anal fin generally with only one very slender spine. Caudal unequally lobed, with the inferior lobe convex and largest. Pectoral fins pointed and scaly at their bases. Ventral shorter and inserted much behind the pectoral.

The teeth of the pharyngeal bones are elongated and conical. The setæ of the first pair of ceratohyals are generally obliquely compressed and short. The dentiferous plates of the branchial arches are thick and ridge-like.

The American Umbrinæ form a very natural group, distinguished from the typical species by their elongated and very gradually tapering head, the more slender body, the more unequally emarginated caudal, the inferior insertion of the pectorals and their scaly bases, and the posterior origin of the ventrals, as well as the presence of only one very slender anal spine.

Type. Menticirrhus alburnus *Gill.*
*Syn.* Umbrina alburnus *Holbrook.*

Genus UMBRINA Cuv.

Umbrina *Cuv.*, Regne Animal, ed. i. vol. i. p. 297. 1817.

Body moderately elongated, with the ante-dorsal region moderately curved, and the occipito-nasal profile declining quite rapidly.

Head oblong, with the snout thick and protuberant. Eyes mostly anterior. Mouth almost horizontal. Supramaxillars mostly retractile under the suborbitars, ceasing near the vertical of the posterior border of the pupil. Preopercular margin finely denticulated.

Teeth villiform; the band of the upper jaw encircled by a row of larger ones.

Anterior dorsal fin with about ten spines. Anal with two spines; the second of which is of moderate size. Ventral fins nearly under or little behind the bases of the pectorals.

The variable teeth of the lower and median upper pharyngeal bones are cylindro-conic. The setæ are of normal form but short; the dentiferous plates of the rest of the branchial arches ridge-like.

Type. Umbrina cirrhosa *Cuv.*

Genus MICROPOGON Cuv.

Perca sp. *Linn.*
Umbrina sp. *Desmarest.*
Sciæna sp. *Quoy and Gaimard.*
Micropogon *Cuv. et Val.* Hist. Nat. des Poissons, vol. v. p. 213.

Body moderately elongated, compressed, quite high and convex at the commencement of the dorsal, and thence declining in a slightly arched line to the snout, and under the second dorsal in a straight descending line. Abdominal outline nearly straight.

Head oblong, rapidly declining downwards, and below nearly straight. Snout subtruncated or convex; little protuberant. Eyes moderate, entirely anterior. Suborbital region quite high. Preoperculum dentated behind, more coarsely towards the angle, where there are two larger distant radiating teeth. Each ramus of the lower jaw with a small row of minute filaments, and the two lateral pores. A very small median symphyseal pore present.

Mouth inferior, nearly horizontal. Supramaxillary bones extending to the posterior border of the pupil, and chiefly received under the suborbitars.

Teeth villiform in both jaws, and with an exterior row of larger ones in the upper.

Anterior dorsal fin with ten spines. Anal fin with the second spine moderate and about half as long as the succeeding ray.

The variable teeth of the lower and median upper pharyngeal bones elongated cylindro-conic. The dentiferous laminæ of the branchial arches *compressed*, and with a row of larger and much curved teeth on *their* ridges, decreasing in size to their free ends.

Type. Micropogon costatus *Dekay*.

*Syn.* Bodianus costatus *Mitchill*.

Micropogon lineatus *Cuv. et Val.*

Genus PACHYPOPS Gill.

Micropogon sp. *Müll. and Troschel*, in Schomburgh's Reisen in British Guiana, (pt. iii.) p. 622. 1848.

Body moderately elongated, highest under the first dorsal, declining towards the snout, and under the second dorsal descending in nearly straight direction. Abdominal outline nearly straight.

Head oblong, with the snout convex and projecting. Eyes large, longitudinally elliptical and with a vertical pupil, partly in the posterior half of the head. Suborbital region of moderate height, much swollen and translucent. Preoperculum finely dentated behind and at its angle. Chin with three barbels. Pores small.

Mouth small, inferior and horizontal. Supramaxillary bones entirely concealed under the suborbitars.

Teeth all villiform in a band on each jaw.

Anterior dorsal fin with ten spines. Anal with its second spine robust, and nearly as long as the succeeding branched ray.

The variable teeth of the lower and those of the median upper pharyngeal bones are cylindro-conic. The setæ of the first ceratohyals are normal. The dentiferous laminæ of the arches are thick and ridge-like.

Type. Pachypops trifilis *Gill*.

*Syn.* Micropogon trifilis *Müll. and Troschel*.

This species appears to have some affinity to the fish called by Cuvier and Valenciennes *Corvina Furcræa*, but that species has apparently no barbels; they could scarcely have been overlooked if they had been present, for the minute pores of the chin are described.

Genus GENYONEMUS Gill.

Leiostomus sp. *Ayres*, Proceedings California Academy of Natural Sciences, vol. i. p. 25. 1855.

Body elongated, nearly equally convex above and below, with the dorso-nasal profile nearly straight.

Head oblong-conical, with the snout abruptly truncated. Eyes moderate,

entirely anterior. Suborbital chain twice as long as wide. Preopercular margin with no true spines, but membranous and crenulated by small flexible spiniform processes. Each ramus of the lower jaw internally provided with several small filaments, and with two distinct pores. Symphyseal pore or pores minute.

Mouth subterminal, slightly oblique. Supramaxillary bones almost concealed under the suborbital, extending to the vertical of the hinder border of the pupil.

Teeth equal and villiform in a band in each jaw.

Anterior dorsal fin provided with about thirteen slender spines. Anal fin with its second spine short and feeble. Caudal emarginated.

The pharyngeal bones and branchial arches are essentially the same as those of the true *Micropogons*.

While the type of this genus possesses the filaments of the lower jaw, characteristic of *Micropogon*, it is distinguished eminently by the form of the head and body, and the absence of true armature of the preoperculum. The form is very characteristic, and its style perhaps resembles that of the true *Liostomi* as much as any other, although it is much more elongated.

Type. Genyonemus lineatus *Gill.*
*Syn.* Leiostomus lineatus *Ayres, Girard.*

The following is a revised catalogue of the representatives of the subfamily Sciæninæ as now restricted, which are found on the eastern coasts of North America:

Genus CYNOSCION Gill.

Cynoscion regalis *Gill.*
Otolithus regalis *Cuv.*
Cynoscion caroliniensis *Gill.*
Otilithus caroliniensis *Cuv. et Val.*
Cynoscion thalassinus *Gill.*
Otilithus thalassinus *Holbrook.*
Cynoscion nothus *Gill.*
Otolithus nothus *Holbrook.*

Genus HOMOPRION Holbrook.

Homoprion lanceolatus *Holbrook.*
Homoprion subtruncatus* *Gill.*
Leiostomus xanthurus *Cuv. et Val.*
Homoprion xanthurus *Holbrook.*

Genus BAIRDIELLA Gill.

Bairdiella argyroleuca *Gill.*

Genus JOHNIUS Bloch.

Johnius ocellatus *Girard.*
Corvina ocellata *Cuv. et Val., Storer.*

Genus MENTICIRRHUS Gill.

Menticirrhus alburnus *Gill.*
Umbrina alburnus *Holbrook.*
Menticirrhus nebulosus *Gill.*
Umbrina nebulosa *Cuv.*
Menticirrhus littoralis *Gill.*
Umbrina littoralis *Holbrook.*

*As previously mentioned, the *Homoprion subtruncatus* does not appear to belong to the genus *Homoprion*, but not having seen specimens, we do not yet feel justified in referring it to any other.

Genus MICROPOGON Cuv.

Micropogon costatus *Dekay.*
Micropogon lineatus *Cuv. et Val.*
Micropogon undulatus *Cuv. et Val.*

From the western coasts of North America, three species are at present known:

Genus RHINOSCION Gill.

Rhinoscion saturnus *Gill.*
Amblodon saturnus *Girard.*

Genus MENTICIRRHUS Gill.

Menticirrhus undulatus *Gill.*
Umbrina undulata *Girard.*

Genus GENYONEMUS Gill.

Genyonemus lineatus *Gill.*
Leiostomus lineatus *Ayres, Girard.*

---

## On the LIOSTOMINÆ.

BY THEODORE GILL.

In the fourth volume of the original edition of the "Histoire Naturelle," Lacépède has described and figured, from the manuscripts of Mr. Bosc, a single species of fish, for which he formed a new genus, on which he bestowed the name of *Leiostomus.* The genus in that work is defined as follows:—

"Les mâchoires dénuées de dents, et entiérement cachées sous les lèvres; ces mêmes lèvres extensibles; la bouche placée au-dessous de museau; point de dentelure ni de piquants aux opercules; deux nageoires dorsales."

In the first edition of the "Règne Animal," Cuvier expressed a belief that the species on which that genus was founded should be referred to *Sciæna,** and in his second edition, referred it, as well as the *Labrus obliquus* of Mitchill,† to the subgenus *Johnius* of Bloch.

In the fifth volume of the "Histoire Naturelle des Poissons," the genus *Leiostomus* was adopted, but was simply distinguished by the small size of the anal spine, the feebleness of the "dentelures" of their preoperculum, and the very fine teeth of the jaws." The latter were said to be so fine, that different observers had not perceived them, and that Lacépède had therefore, always confiding in the assertions of others, made of one of the species referred to the group a peculiar genus, called *leiostomus,* or smooth mouth.‡ The pharyngeal bones were further stated to have paved teeth on their posterior borders. To the genus thus defined were referred two species; the first was described as *Leiostomus humeralis,* and regarded as identical with the *Labrus obliquus* of Mitchill; the second as the *Leiostomus xanthurus* of Lacépède. The two species are distinguished only on account of the *greater* convexity of the nape and the absence of bands and spots in the latter. The teeth of *Leiosto-*

---

*Je ne doute pas que le *leyostome queue jaune,* Lac., iv. x. i. ne doive aussi être rapproché de ce sous-genre (*Sciæna*)." l. c., vol. ii. p. 298.

†This was called *Johnius humeralis,* Cuv., and was regarded as probably identical with the *Perca undulata* of Linnæus, which last was afterwards, with more propriety, identified with the species now called *Micropogon undulatus.*

‡The *Leiostomus obliquus* has a band of very fine teeth in the upper jaw, which have been overlooked by Bosc.

*mus xanthurus* are said to be villiform, in a very straight band, and scarcely perceptible, so that they had been stated to be absent. It is moreover affirmed that M. Bosc, who had furnished to M. Lacépède the figure and notes on which that naturalist had established the *Leiostomus xanthurus*, had sent for examination to Cuvier and Valenciennes the fish itself.

Cuvier and Valenciennes having thus stated that both of the *Leiostomi* were provided with teeth on each of the jaws, Dr. Dekay, in his "New York Fauna," and Dr. Storer, in his "Synopsis," followed them. Dekay, in his diagnosis of the genus, not daring to disagree with Cuvier, describes the "teeth in the jaws, even and excessively small," and "very minute denticulations on the preoperculum;" in the description of his *Leiostomus obliquus*, Dekay again states that the teeth are "so minute as to be visible only with a lens," and that the preoperculum is "minutely denticulate." Dr. Storer adopted the generic diagnosis formulated by Dekay.

Dr. Holbrook subsequently framed for a new species and the *Leiostomus xanthurus* of Cuvier and Valenciennes, and their copyists, a new genus, called *Homoprion*, remarking at the same time that the latter was "certainly the fish for which Lacépède established his genus *Leiostomus*." Notwithstanding this statement, he has retained the name of *Leiostomus* for the *Leiostomus humeralis* of Cuvier and Valenciennes, or *Leiostomus obliquus* of the Americans, thus assigning Lacépède's *name* and *authority* to a genus with which that naturalist must have consequently been believed to be unacquainted. The genus thus restricted was characterized by the "preopercle smooth or without serratures; *intermaxillary teeth* minute; posterior pharyngeal teeth paved." The *Homopriontes*, on the other hand, had "small, *villiform, card-like teeth in both jaws;* upper jaw with an external row of larger, conical and pointed teeth; pharyngeal teeth not paved; preopercle with large radiating serratures or spines at its angle.

We now revert to the description of the *Leiostomus xanthurus* given by Lacépède. That description may be divided into two portions: one relates to form and external anatomical or permanent characters; the other to color, which is evanescent and liable to alteration.

The zoological characters are as follows, the order being regulated by their respective value:

1*st*. Les machoires denuées de dents, et entierment cachées sous les lèvres.
2*d*. Point de dentelure ni de piquants aux opercules.
3*d*. Le bout du museau est mousse.
4*th*. La caudale échancrée en croissant.
5*th*. Dix rayons à la premiere nageoire du dos.

In all of these respects, the species of Lacépède agrees with *Leiostomus obliquus* of the American naturalists, and not with the one named by Cuvier and his followers *Leiostomus* or *Homoprion xanthurus*. That species has

1*st*. Well developed teeth on both jaws.
2*d*. "Large radiating serratures or spines" at the angle of the preoperculum.
3*d*. The muzzle scarcely blunt.
4*th*. The caudal fin "entire or slightly longest in the middle."
5*th*. Eleven spines supporting the first dorsal fin.

The *Leiostomus obliquus* agrees then with the species described by Lacépède in all the anatomical peculiarities mentioned,* and by the same characters is the *Leiostomus xanthurus* of Cuvier distinguished from it.

What then are the reason that have induced almost all naturalists to refer Lacépède's description to the latter fish?

In the first place, the color may be urged as a reason.

* Lacépède mentions that his species has often only about a decimetre in length, and then its greatest height is nearly four centimetres. The proportions so indicated also best correspond with the *Leiostomus obliquus*.

Lacépède describes the color of his species thus:

"Il a en effet la nageoires de la queue ainsi que les autres nageoires, jaunes ou jaunâtres; elles sout d'ailleures pointillèes de noir. Une couleur brune argentine règne sur la partie supérieure de l'animal, et un blanc argenté sur l'inferieure. L'iris est jaune."

This description, it must be confessed, is more applicable to the so-called *Homoprion xanthurus* than to the *Leiostomus obliquus*, especially that part which refers to the silvery whiteness of the lower parts. But it also equally applies to an individual of the latter species, whose bands and humeral spot have faded, and whose scales have been rubbed from the belly, as is frequently the case with old, dried or alcoholic specimens.

Bosc, while taking his description and figure of the species from a dried or preserved specimen of the *Leiostomus obliquus*, from which the bands and humeral spot had disappeared, to complete the description of the color, may possibly have had either recourse to a fresh specimen of the "yellow tail," or *Homoprion xanthurus*, which was casually and separately examined, or perhaps relied partly on the description of another. At most, the description of the coloration is the *only documentary evidence* to which we can appeal in support of the views of the identity of the *Homoprion xanthurus* with *Leistomus xanthurus*. Appeal must be then made to other sources.

As already mentioned, Cuvier and Valenciennes have informed us that Bosc had sent to them the same species as that described by Lacépède.* This statement may be thus explained.

The specimen whose anatomical characters were described and figured by Bosc, could not have been the one sent; that forwarded was believed to belong to the same species as the one described, on account of the identity of popular names. The original, with the color faded, had probably been pronounced to be the "yellow tail." The statement was doubtless accepted as true, and no comparison made to ascertain whether such was the case. A demand having been afterwards made for a specimen of the species described, one of the true "Yellow tail" was obtained and sent as belonging to it, reliance being placed on the correct application of the popular names. This theory is assumed, as it is deemed to be inadmissible to go behind the description to such a position, when the description and specimen so strongly conflict, and when that description is so applicable to a common species found in the same regions. It is not stated that the *type* of Bosc's original description and figure was sent. The name of *Leiostomus* is therefore retained for the species without teeth on the lower jaw, and with an entire preoperculum.

While it may be admitted that the name of *Leiostomus* can be retained for the genus, it may be still questioned whether the specific name can be accepted.

As the description, so far as it goes, is applicable to the *Leiostomus obliquus*, and the fault is simply due to an omission of mention of the oblique bands and the humeral spot, which are frequently faded, we are of the opinion that the specific name must be also retained.

Cuvier and Valenciennes' assignation of teeth to both jaws of the *Leiostomus humeralis* can be only explained on the supposition of their belief in the universality of the characters of dentition, and their conclusion that the species must have teeth because apparently nearly allied ones had.

The rest of the description and the radial formula are more applicable to that species which has been called by the same name by subsequent naturalists, or the *Homoprion xanthurus* of Holbrook.

Can the specific name of *xanthurus* be retained for the species described under that name?

* "M. Bosc, qui avait fourni à M. de Lacépède le dessin et la note dont il a tiré son article, a bien voulu nous donner le poisson ui même, et nous sommes ainsi assurés de l'espèce."

We consider that it would be wrong to do so, although the species belongs to a different genus from the *Leiostomus xanthurus* of Lacépède. The name of Lacépède was adopted for that species under an erroneous impression, and that of *Homoprion xanthurus* was applied with the express understanding that it was "certainly the fish for which Lacépède established his genus *Leiostomus*." It has been demonstrated that documentary evidence does not support this assertion. The retention of the name of Holbrook would therefore perpetuate an error; the name of *Homoprion subtruncatus* has been consequently offered as a substitute in the "Catalogue of the Fishes of the Eastern coast of North America."

There has been recently referred to the genus *Liostomus*, a fish found on the coast of California. It has been called by Dr. W. O. Ayres, *Leiostomus lineatus*, and again described and figured from nature by Dr. Girard, under the same name.

After a perusal of the description of that species, it is evident that it does not belong to the genus *Liostomus*, but, from its imperfection, it remains doubtful to what genus it really should be referred. A cursory examination would remind the naturalist of the *Johnii*, but on a more careful investigation, all the teeth of the upper jaw are found to be small and equal, and several small but distinct *barbels* are discovered along the inner margin of each limb of the lower jaw. The genus *Micropogon* is therefore at once suggested, but the species differs from the other representatives of that genus in the armature of the preoperculum, the form of the caudal fin and the number of rays in the dorsal and anal. It consequently appears to belong to a different genus, to which no name has yet been given. The name of *Genyonemus* may be therefore bestowed on it.

Agreeing, therefore, with Holbrook, and removing the *Leiostomus xanthurus*, of Cuvier and Valenciennes from the genus, and having shown that the *Leiostomus lineatus* of Ayres and Girard is to be also excluded, the type of the genus is the only species yet known. That single species can at once be distinguished from all other Sciænoids by its peculiar form and *tout ensemble*. That peculiarity of appearance is also coincident with most important anatomical characters which indicate that the relations of the species are far less intimate with other genera than has been supposed. Those characteristics are of such a nature as appears to necessitate the establishment of a distinct subfamily for the *Liostomi*. The name of *Liostominæ* is therefore now conferred on it. The diagnoses of the subfamily and genus will be given.

Subfamily LIOSTOMINÆ Gill.

The body is compressed and subovate, covered with ctenoid scales. The lower jaw is received within the upper. Teeth are present only in the upper jaw.

The first dorsal fin commences over or before the bases of the pectorals, and is longer than high. The ventral fins are inserted under or slightly behind the pectoral.

The lower pharyngeal bones when united present a hastate form; the external sides are incurved or emarginated; they are contiguous to each other for the whole of their internal sides; from the apex of the basal emargination, they are curved outwards or convex. Each bone is thickest behind, and there is a high marginal or submarginal ridge which is most elevated towards the posterior third.

The upper pharyngeal bones of each side are only two in number; the anterior is semi-oval, and is emarginated to receive the posterior, which is of an irregular ovoid form, and larger than the anterior.

The teeth of the pharyngeal bones are not conical.

The setæ of the ceratohyals of the first pair of branchial arches are of moderate length.

Genus LIOSTOMUS Lacépède.

Leiostomus *Lacépède* Hist. Nat. vol. iv. p. 439.
Leiostomus *Holbrook*, Southern Ichthyology, p. 21. 1847.

Body subovate, compressed, highest under the first dorsal. Abdominal outline less arched than the dorsal.

Head short, with the fronto-occipital region very oblique, and the snout high, subtruncated, and slightly convex. Eyes rather large, and mostly or wholly anterior. Suborbital region high.

Mouth small, scarcely oblique. Supramaxillars terminating under the pupils, and mostly retractile under the suborbitars.

Teeth in a villiform band in the upper jaw; entirely absent in the lower.

Preoperculum broadly rounded and entire, but with an apparently crenulated membranous margin. Lateral and symphyseal pores present.

Anterior dorsal fin sustained by ten spines. Anal with its second spine short and weak. Caudal emarginated.

The lower pharyngeal bones are furnished internally near their interno-posterior margins with several rows of more or less truncated and excavated molar teeth; their other teeth are elongated and compressed, most slender near their bases, curved with a sigmoid flexure. Their terminal portions especially are of a burnt brown or blackish color.

The posterior of the upper pharyngeal bones are also paved internally near their ends with several rows of molars like those of the lower bones. The rest of the posterior and the whole of the anterior pharyngeals are provided with elongated, compressed teeth, most slender below, sigmoidally curved, and with a constriction a short distance from the tip, which gives the apex an unguiform aspect.

The setæ of the first pair of ceratohyals are furnished with nearly colorless and very slender teeth; the dentiferous laminæ of the rest of the branchial arches are compressed, and their margins armed with slender, deeply colored teeth like those of the lower pharyngeal bones.

The elongated teeth of the longer pharyngeals and the branchial arches have some resemblance to the teeth of the pharyngeal bones of Cyprinoids, called by Heckel raptatorial, ("dentes raptatorii") but are much more slender, especially at the base.

Type. Liostomus xanthurus *Lac.*
*Syn.* Leiostomus humeralis *Cuv. et Val.*
Leiostomus obliquus *Dekay.*

---

## On the identity of the Genera NEOMÆNIS of Girard, and LUTJANUS of Bloch.

BY THEODORE GILL.

In the Ninth Annual Report of the Smithsonian Institution, a species of fish has been described and referred to the genus *Lobotes*, under the name of *Lobotes emarginatus*. A few specimens of the species were taken in August, among the grass along the banks of Egg Harbor river at Beesley's Point.

Subsequently, Dr. Charles Girard, in his Report on the Ichthyology of the United States and Mexican Boundary Survey, framed for the species a new genus, to which he gave the name of *Neomænis*, and which he referred to the family of Mænidæ.

On an examination of the description and figures given in that Report, it was evident that the species did not belong to either the families of Sciænoids or Mænoids, as those groups have been characterized by Cuvier, and accepted by almost all subsequent naturalists. It appeared to belong to the genus *Mesoprion*, of the family of Percoids, but as no description was given of the ex-

tent and character of the squamation, it was impossible to arrive at a certain conclusion without further evidence.

The specimens preserved in the Museum of the Smithsonian Institution were afterwards searched for and found, and it was then discovered that they certainly belonged to the genus *Mesoprion*, as defined by Cuvier.

None of the descriptions of the various species of that genus, and especially of those found in the West Indies, were found to apply to the species in question, and it appears quite distinct. The specific names, although applicable to all the typical representatives of the genus, must be then retained, and after reference to its proper genus, it will assume the name of *Lutjanus emarginatus*. The genus *Lutjanus* having been founded on allied species, and its first representative being a true *Mesoprion* of Cuvier, the former name takes precedence of the latter.

In the "Catalogue of the Fishes of the Eastern Coast of North America," the *Neomœnis emarginatus* has been adopted with that name, and referred to the subfamily of *Lobotinæ*, and the family of Pristipomatoids. Neither the specimens on which the species was founded, nor the Report of Dr. Girard were at hand when the list of the Pristipomatoids was compiled, and the author relied on the original description, where only the form and coloration were mentioned. A simple note had been made in the margin that the genus *Neomœnis* had been established by Girard for it, and as it evidently did not belong to *Lobotes*, that name was adopted. As it had been referred to *Lobotes*, it was presumed that there was a strong likeness to the species of that genus, and it was consequently referred to the subfamily of Lobotinæ; as, however, the form was described as "elongated subfusiform," and the caudal as "emarginated posteriorly," and as the color resembled that of some of the species of *Hœmulon*, the genus *Neomœnis* was supposed to form a passage from the Lobotinæ to the Pristipomatinæ.

It is worthy of note that Dr. Bleeker has also made a mistake similar to that committed by the North American naturalists. In the Natuurkundig Tijdschrift voor Nederlandsch Indie, he has first described a fish as *Dentex pristipoma*, for which he afterwards formed a new genus, and called the species *Pristipomoides typus*, and which he subsequently referred to the genus *Mesoprion*, to which it appears to truly belong. Dr. Günther has retained the genus *Pristipomoides* in his Catalogue of the Acanthopterygian Fish, having probably overlooked the correction by Dr. Bleeker of his error.

The history of those fishes is interesting, as it is evident that when such excellent and celebrated naturalists have referred representatives of the Percoid *Lutjani* to different genera of Pristipomatoids, the distinction between the family of Percoids and Pristipomatoids must be very slight.

There is indeed the strongest resemblance between the Lutjani, Pristipomatinæ and Sparoids; and the typical Percoids, Pristipomatoids, Sparoids and Pimelepteroids will perhaps be found to belong to one true family.

At the time of the compilation of the Catalogue of the Fishes of the Eastern Coast, we were aware of the affinity of those families, but adopted some of them in deference to other authors, and others to make of more nearly equal value the different groups. It was intended to restrict the name of Percoids to those fishes which have the aspect of *Perca* and *Serranus*, whose vomerine and palatine bones are provided with acute teeth, and whose jaws have acuminate ones; the palatine teeth are rarely absent.

The Pristipomatoids included those fishes whose jaws are moderately protractile, and furnished with acute teeth; the palatine arch is edentulous. The form is exemplified in *Hœmulon*. The Sparoids have a dentition which is well described by Günther—"*Either trenchant teeth in front of the jaws, or lateral series of molar teeth.*" The Pimelepteroids, included by Günther among the Sparoids, were regarded as forming a distinct family, characterized by the trenchant teeth in front of the jaws, the presence of palatine teeth, and the dense squamation of the vertical fins. The Sparoids consequently embraced only those whose palatine arch was unarmed. There is between many of the

forms thus brought together a strong likeness, but yet there are others which, in almost all anatomical and zoological characters, show a greater affinity to species that by those principles of classification would be referred to distinct families. While the above mentioned families are therefore for the present retained, it is with the understanding that such is done simply because our knowledge of the true principles of classification is not sufficiently perfect, and not because they are believed to be founded in nature. The typical Percoids, Pristipomatoids, Sparoids and Primelepteroids, appear, for example, to be as nearly allied to each as are the Rhyptici to the Percoids. They cannot be distinguished by any character except the dentition; and characters drawn from that alone, important as it is in many cases, can scarcely of itself be sufficient to establish family groups. It is probable that all of those fishes will hereafter be united, and quite a different distribution of the genera be adopted.

## Notes on the Habits of APHREDODERUS SAYANUS.

BY CHARLES C. ABBOTT.

If we except the knowledge of this fish's existence, nothing seems to be known concerning it; though few of our fluviatile species have a greater geographical distribution, or are more numerous in many extended and widely separated localities. At Camden, New Jersey, this species abounds in immense numbers; during spring, in schools, similar in size and general appearance, to the young of *Amiurus De Kayi* or *atrarius*; in summer and autumn remaining in pairs generally, though often in companies of from five to nine; in winter scattered irregularly through the streams; each seeking shelter, and generally more than half burying themselves in the sand; though to clay or plastic mud they seem to have a great aversion.

The Aphredoderus is most strictly carnivorous, and appears to delight in the unnecessary destruction of all malacopterygian fishes, not excepting its own species, if they be too weak to withstand its attacks. Immature cyprinoids are its favorite food, though the *Melanura annulata* is chiefly its victim. Being strictly nocturnal in its habits, little opportunity is offered to learn its peculiar mode of capturing its prey, but from the fact of often finding the tail of a cyprinoid projecting from the jaws of the Aphredoderus, and from the position in which the author has universally found the prey, when specimens were dissected, there is little doubt that "head foremost" is the usual fashion. The dentition is not of such character as to lead to the idea of extreme carnal propensities of the species in question; and yet it may be doubted if any fluviatile species is more so, if we except the *Belone longirostris*. The pikes we know are strictly carnivorous, but there is no instance in our memory of that fish destroying others for the mere sake of destruction. Three specimens living, a few months since, in the aquarium of the Academy, were attentively watched by the author, and in the space of eleven days they had destroyed twenty-seven black-nosed dace, (*Argyreus atronasus*,) and by continued worrying succeeded in the destruction of a mud sun-fish, (*Ambloplites pomotis*,*) nearly quadruple their size.

From the comparison of specimens from different localities, it is highly probable that two species may be detected. The author has taken specimens near Philadelphia, exactly coinciding with Gilliam's description, but varying in the general tint of the body, and in the want of the white margin of the caudal fin. On examining specimens from Cedar Swamp Creek, N. J., taken by Prof. S. F. Baird, and the originals of his description, in his Report of the

*This fish was first described by Baird, as *Centrarchus pomotis;* but is congeneric with *Ambloplites rupestris* Gill, and must be so referred.

*Ambloplites pomotis* Abb.

*Centrarchus pomotis* Baird, Ninth Smith. Rep. p. 325.

Fishes of the New Jersey Coast, they were found to differ from those found more inland, taken at Trenton, N. J., but coincided with the original diagnosis; there are at least two varieties, one characterized by their larger size, chocolate brown color of the body, and unmarked caudal, the other, much smaller, nearly black, with a white margin to the caudal fin, wider at the angles and lost near the centre of the posterior edge of the fin.

No opportunities have as yet been offered to see the spawning of this species; but that it guards its ova as the *Pomotis maculatus*,* Gill, is highly probable. The ova in all probability are deposited very early in March, in the latitude of Philadelphia, as very young specimens were taken by the author on the third of the present month. The young were swimming in loose shoals, and were accompanied by a number of adult specimens, who were guarding them from the ravages of the pike, (that they themselves might feast the better.)

---

## Description of a new genus (STREPHOBASIS) of the family MELANIDÆ, and three new species.

BY ISAAC LEA.

Family MELANIDÆ.

Genus STREPHOBASIS.

Testa cylindracea. Apertura subquadrata. Columella infernè incrassata et retro-canaliculata. Operculum corneum, instar spiræ.

The mollusk for which I propose this genus, was sent to me by Wm. Spillman, M. D., of Columbus, Mississippi, and I have before me over a dozen specimens from a third to nearly an inch in length. The very great number of species of the genus *Melania*, makes it desirable to eliminate any group with characters sufficiently distinct to permanently recognize it. The very remarkable retrose callus at the base of the column, causing a lateral sinus, is characteristic of this genus.

STREPHOBASIS SPILLMANII.—Testâ lævi, cylindraceâ, crassiusculâ, vel tenebroso-fuscâ vel virente, valdè vittatâ, nitidâ; spirâ obtusâ, curtâ, ad apicem carinatâ; suturis irregulariter impressis; anfractibus supernè convexiusculis, ultimo constricto; aperturâ subgrandi, subquadratâ, intus cærulescenti et valdè vittatâ; labro acuto, sinuoso; columellâ sinuosâ, ad basim incrassatâ et retrò canaliculatâ.

*Hab.*—Tennessee River. Wm. Spillman, M. D.

STREPHOBASIS CORNEA.—Testâ lævi, cylindraceâ, crassâ, corneâ; spirâ obtusâ; suturis irregulariter impressis; anfractibus supernè convexiusculis, ultimo constricto; aperturâ rhombo-quadratâ, intus luteo-albâ; labro acuto, sinuoso; columellâ sinuosâ, ad basim incrassatâ et retro-canaliculatâ.

Operculum small, ovate, spiral, dark brown, with the polar-point near the base.

*Hab.*—Tennessee River. Wm. Spillman, M. D.

STREPHOBASIS CLARKII.—Testâ lævi, cylindraceâ, subtenui, luteo-corneâ, trivittatâ; spirâ valdè obtusâ, curtâ; suturis irregulariter impressis; anfractibus quinis, supernè convexiusculis, ultimo constricto; aperturâ subgrandi, quadratâ, intus albidâ, valdè vittatâ; labro acuto; columellâ sinuosâ, ad basim albâ, incrassatâ et retro-canaliculatâ.

*Hab.*—Tennessee River, at Chattanooga, Tennessee. Joseph Clark.

---

*The author has lately seen in a large aquarium, the *Bryttus chætodon* guarding its nest and eggs similarly to the manner of the common sun-fish. This may be a habit, characteristic of the family *Ichthelidæ*, as the *Ichthelis rubricauda* has often been noticed making its nest in May, after the manner of the type of the family, though invariably preferring deeper water, which may be a reason of its not having been generally noticed.

## On the Marine Shells brought by Mr. Drexler from Hudson's Bay, and on the occurrence of a Pleistocene deposit on the Southern shore of James' Bay.

BY WM. STIMPSON.

Mr. Drexler, who last summer visited the south-eastern shores of Hudson's Bay, under the auspices of the Smithsonian Institution, has brought home some shells which it will be of interest to notice here, since nothing has been hitherto published upon the molluscous fauna of that region. The physical conditions of the bay do not seem to be favorable to any great development of true marine mollusks at the present day, though we have evidence of an abundance of deep-sea species at a former epoch. The waters of the bay are now mostly shallow and somewhat brackish.

Cape Hope, the point at which the marine shells were collected, is situated on the eastern side of James' Bay, in latitude about 52° 10′ N. Only three species of these shells were found alive, but these occurred in great numbers, above low water mark. They were

*Mytilus edulis* L.
*Macoma fragilis* O. Fabr. (*T. grönlandica.*)
*Littorina grönlandica* Chemn.

The *Littorina* reaches a large size, (0·65 inch,) and is probably identical with *L. tenebrosa.* We cannot distinguish it from specimens from Greenland.

The following species were found dead at Cape Hope, perhaps washed out of some pleistocene deposit, as they are the characteristic species of that period.

*Rhynchonella psittacea* Ch.
*Pecten islandicus* Müll.
*Cardium islandicum* Ch.
*Astarte arctica* (Gray.)
*Astarte striata* (Leach.)
*Mya truncata* Lin.
*Admete viridula* (O. Fabr.)

The specimens of *Cardium* were much eroded on the outer surface, leaving sharp, distant, crenulated, concentric ridges, as in those from the pleistocene of Lake Champlain.

The southern part of James' Bay is so shallow that even small boats must go out of sight of land to find water deep enough to enable them to float at low tide. This part, called Hannah Bay, forms the embouchure of the Hannah river, in which Mr. Drexler collected many fresh water shells, chiefly elongated *Lymneæ*, and large *Planorbes.* In a box of these shells we found a considerable number of marine species, evidently fossils washed out of the river banks, indicating the existence there of an extensive marine pleistocene deposit. The following is a list of the species, which, with one exception, are deep water forms.

*Mytilus edulis* Lin.
*Nucula expansa* Reeve (*N. tenuis.*)
*Yoldia portlandica* (Hitch.)
*Leda pernula* (Müll.)
*Macoma sabulosa* (Spengl.) (*T. proxima.*)

Of these, the *Yoldia portlandica* was most abundant, about twenty specimens being found, with valves united, among which there were forms exactly corresponding to *Y. siliqua* Reeve, which appears to be only a variety. This species is now found living in the Arctic seas, where it was dredged by Capt. Sir Edward Belcher. We may here remark that we have met with living examples of *Astarte*, exactly corresponding to *A. laurentiana*, so that none of the boreal pleistocene species yet found in North America can be regarded as extinct.